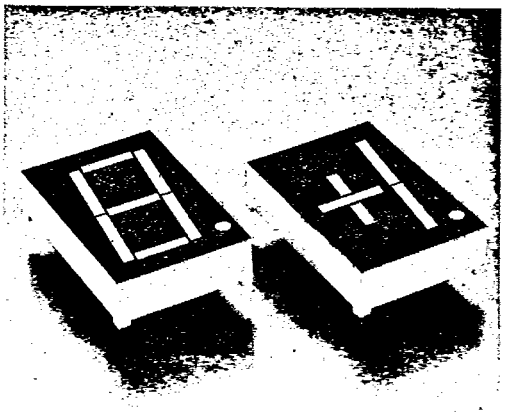
LITEON LED SPECIALIST

LTS-1700 SERIES

1.02" SINGLE DIGIT NUMERIC DISPLAYS

FEATURES

- 1.02 INCH (26.0mm) DIGIT HEIGHT.
- CONTINUOUS UNIFORM SEGMENTS.
- CHOICE OF FIVE BRIGHT COLORS-RED/BRIGHT RED/GREEN/YELLOW/ORANGE.
- LOW POWER REQUIREMENT.
- EXCELLENT CHARACTERS APPEARANCE.
- HIGH BRIGHTNESS.
- WIDE VIEWING ANGLE.
- SOLID STATE RELIABILITY.
- CATEGORIZED FOR LUMINOUS INTENSITY.
- I.C. COMPATIBLE.
- EASY MOUNTING ON P.C. BOARD OR SOCKETS.



DESCRIPTION

The LTS-1700 series are 1.02 inch (26.0mm) height single digit displays.
The red series devices utilize LED chips which are made from GaAsP on a GaAs substrate. The bright red and green series devices utilize LED chips which are made from GaP on a transparent GaP substrate. The yellow and orange series devices utilize LED chips which are made from GaAsP on a transparent GaP substrate, All devices have gray face and white segment color.

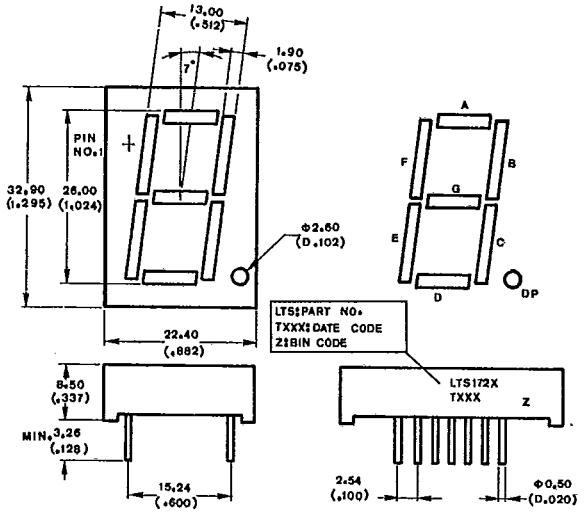
DEVICES

PART NO. LTS-					DESCRIPTION	PACKAGE DIMENSION	INTERNAL CIRCUIT DIAGRAM
RED	BRIGHT RED	GREEN	YELLOW	ORANGE			
1720R	1720P	1720G	1720Y	1720E	Common Anode, Rt. Hand Decimal	A	A
1723R	1723P	1723G	1723Y	1723E	Common Cathode, Rt. Hand Decimal	A	B
1740R	1740P	1740G	1740Y	1740E	Common Anode, ± 1 Overflow	B	C
1743R	1743P	1743G	1743Y	1743E	Common Cathode, ± 1 Overflow	B	D

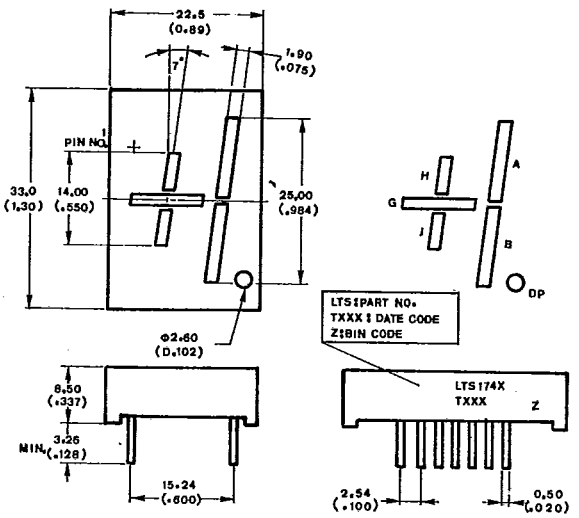
SEVEN-SEGMENT LED DISPLAYS

PACKAGE DIMENSIONS

A. LTS-1720/1723



B. LTS-1740/1743



NOTE: All dimensions are in millimeters (inches), tolerance is 0.25mm (0.010") unless otherwise noted.

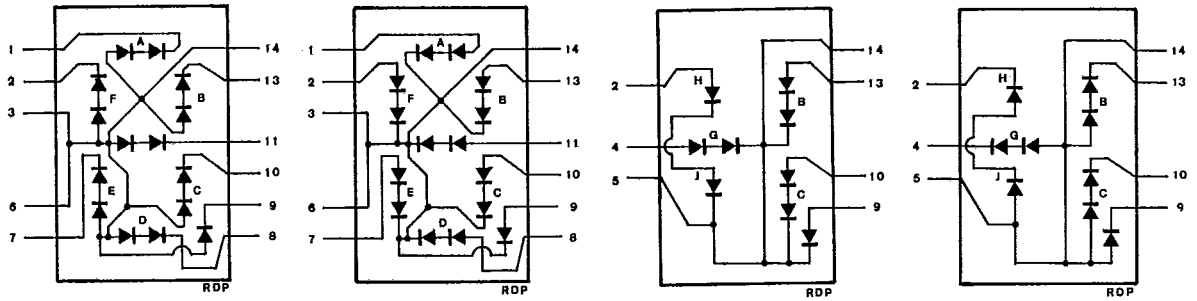
PIN CONNECTION

PIN NO.	CONNECTION			
	A. LTS-1720	B. LTS-1723	C. LTS-1740	D. LTS-1743
1	Cathode A	Anode A	No Pin	No Pin
2	Cathode F	Anode F	Cathode H, J	Anode H, J
3	Common Anode *1	Common Cathode *1	No Pin	No Pin
4	No Pin	No Pin	Cathode G	Anode G
5	No Pin	No Pin	Common Anode *2	Common Cathode *2
6	Common Anode *1	Common Cathode *1	No Pin	No Pin
7	Cathode E	Anode E	No Pin	No Pin
8	Cathode D	Anode D	No Pin	No Pin
9	Cathode D.P.	Anode D.P.	Cathode D.P.	Anode D.P.
10	Cathode C	Anode C	Cathode C	Anode C
11	Cathode G	Anode G	No Pin	No Pin
12	No Pin	No Pin	No Pin	No Pin
13	Cathode B	Anode B	Cathode B	Anode B
14	Common Anode *1	Common Cathode *1	Common Anode *2	Common Cathode *2

NOTES: 1. Pin 3, 6 & 14 are internally connected.
2. Pin 5 & 14 are internally connected.

INTERNAL CIRCUIT DIAGRAM

A. LTS-1720 B. LTS-1723 C. CLS-1740 D. LTS-1743



ABSOLUTE MAXIMUM RATINGS AT T_A = 25°C

PARAMETER	RED	BRIGHT RED	GREEN	YELLOW	ORANGE	UNIT
Power Dissipation Per Segment	90	65	120	100	120	mW
Peak Forward Current Per Segment (1/10 Duty Cycle, 0.1ms Pulse Width)	160	60	100	80	100	mA
Continuous Forward Current Per Segment	25	15	25	20	25	mA
Derating Linear From 25° C Per Segment	0.3	0.18	0.3	0.24	0.3	mA/°C
Reverse Voltage Per Segment	10	10	10	10	10	V
Operating Temperature Range	−25°C to +85°C					
Storage Temperature Range	−25°C to +85°C					
Solder Temperature 1/16 inch Below Seating Plane for 3 Seconds at 260°C						

SEVEN-SEGMENT LED DISPLAYS

ELECTRICAL/OPTICAL CHARACTERISTICS AT T_A = 25°C
LTS-1700R SERIES

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	Iv	400	1200		μcd	I_F = 10 mA
Peak Emission Wavelength	λp		655		nm	I_F = 20 mA
Spectral Line Half-Width	Δλ		24		nm	I_F = 20 mA
Forward Voltage, any Segment	V_F		3.4	4.0	V	I_F = 20 mA
Reverse Current, any Segment	I_R			100	μA	V_R = 10V
Luminous Intensity Matching Ratio	Iv-m			2:1		I_F = 20 mA

Note: The BIN brightness classification see page 6-161, category C

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

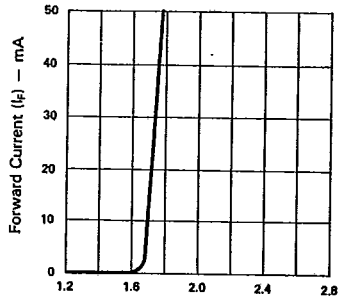


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

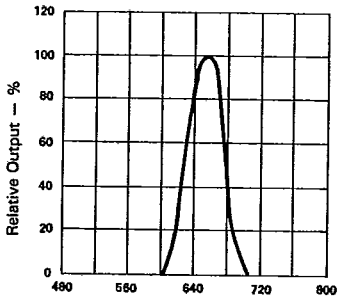


Fig. 2 SPECTRAL RESPONSE.

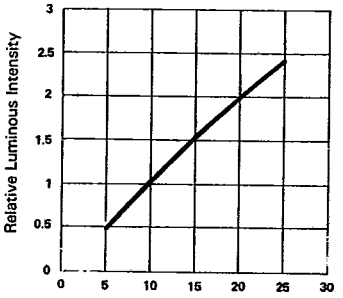


Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

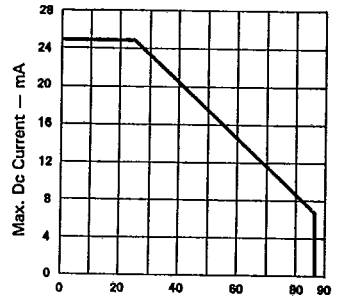


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.

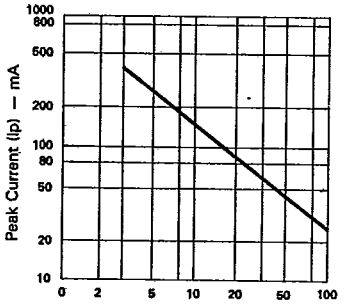


Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE — F = 1 KHz)

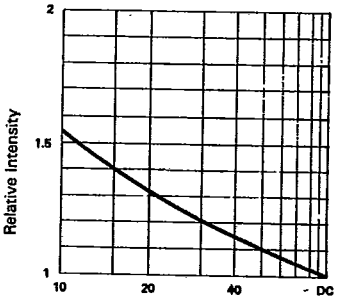


Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE% (AVERAGE I_F = 10mA PER SEG.)

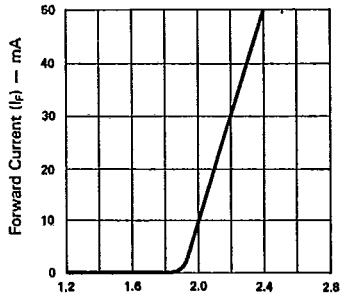
ELECTRICAL/OPTICAL CHARACTERISTICS AT T_A = 25°C
LTS-1700P SERIES

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	Iv	650	2000		μcd	I_F = 10 mA
Peak Emission Wavelength	λp		697		nm	I_F = 20 mA
Spectral Line Half-Width	Δλ		90		nm	I_F = 20 mA
Forward Voltage, any Segment	V_F		4.2	5.6	V	I_F = 20 mA
Reverse Current, any Segment	I_R			100	μA	V_R = 10V
Luminous Intensity Matching Ratio	Iv-m			2:1		I_F = 20 mA

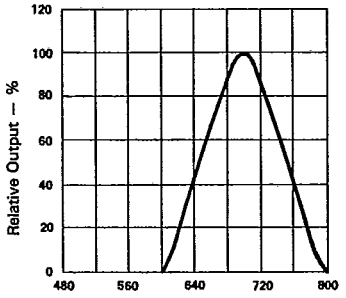
Note: The BIN brightness classification see page 6-161, category C

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

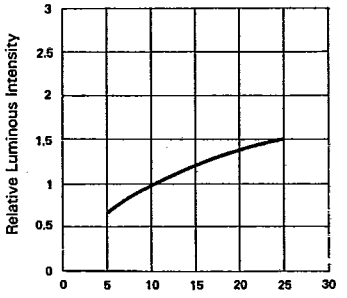
(25°C Ambient Temperature Unless Otherwise Noted)



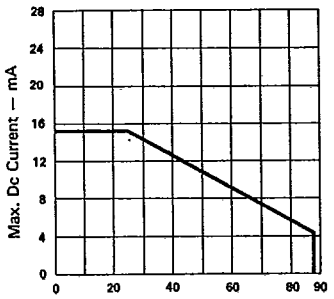
Forward Voltage (V_F) — Volts
Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.



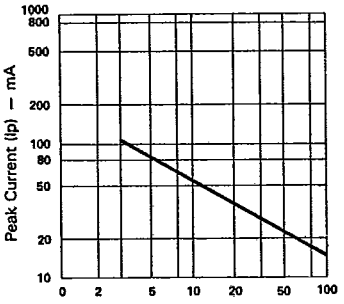
Wavelength (λ) — nm.
Fig. 2 SPECTRAL RESPONSE.



Forward Current (I_F) — mA
Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).



Ambient Temperature (Ta) — °C
Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.



Duty Cycle %
Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE — F = 1 KHz)

SEVEN-SEGMENT LED DISPLAYS

ELECTRICAL/OPTICAL CHARACTERISTICS AT T_A = 25°C
LTS-1700G SERIES

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	Iv	1600	4800		μcd	I_F = 10 mA
Peak Emission Wavelength	λp		565		nm	I_F = 20 mA
Spectral Line Half-Width	Δλ		30		nm	I_F = 20 mA
Forward Voltage, any Segment	V_F		4.2	5.6	V	I_F = 20 mA
Reverse Current, any Segment	I_R			100	μA	V_R = 10V
Luminous Intensity Matching Ratio	Iv-m			2:1		I_F = 20 mA

Note: The BIN brightness classification see page 6-161, category C

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

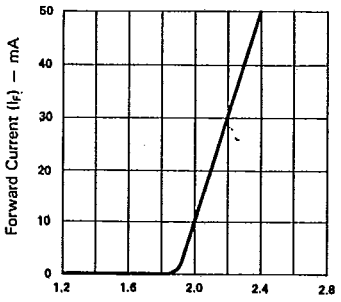


Fig.1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

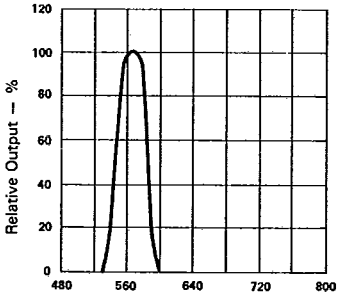


Fig. 2 SPECTRAL RESPONSE.

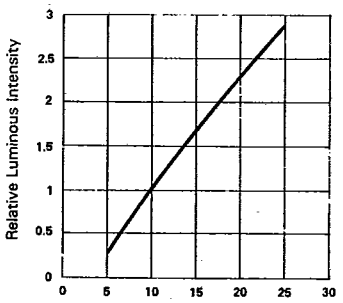


Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

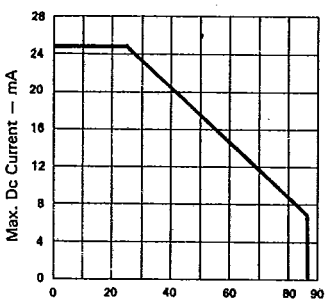


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.

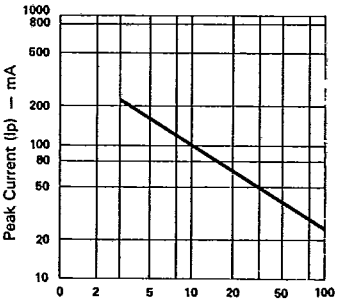


Fig.5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE — F = 1 KHz)

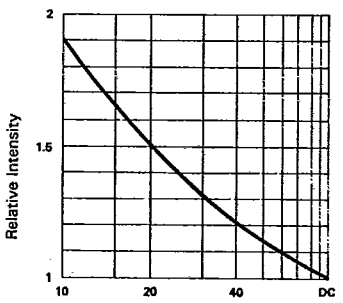


Fig.6 LUMINOUS INTENSITY Vs. DUTY CYCLE% (AVERAGE I_F = 10mA PER SEG.)

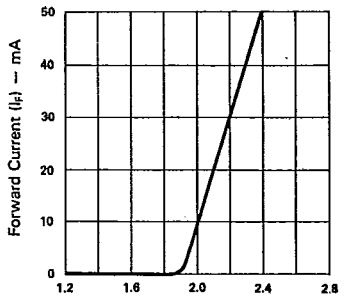
ELECTRICAL/OPTICAL CHARACTERISTICS AT T_A = 25°C
LTS-1700Y SERIES

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	Iv	1400	4800		μcd	I_F = 10 mA
Peak Emission Wavelength	λp		585		nm	I_F = 20 mA
Spectral Line Half-Width	Δλ		35		nm	I_F = 20 mA
Forward Voltage, any Segment	V_F		4.2	5.6	V	I_F = 20 mA
Reverse Current, any Segment	I_R			100	μA	V_R = 10V
Luminous Intensity Matching Ratio	Iv-m			2:1		I_F = 20 mA

Note: The BIN brightness classification see page 6-161, category C

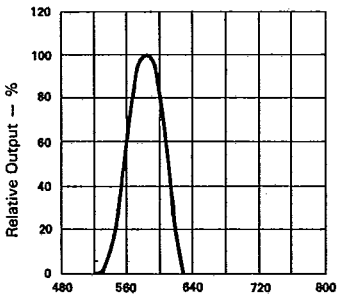
TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)



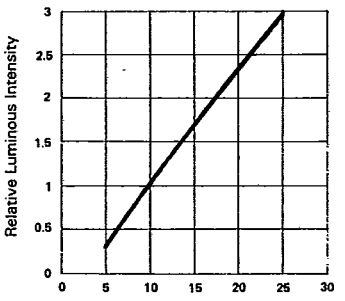
Forward Voltage (V_F) — Volts

Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.



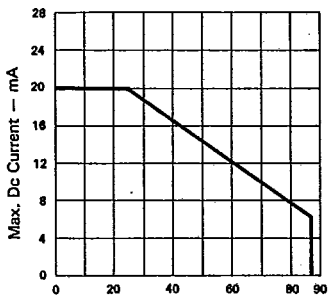
Wavelength (λ) — nm.

Fig. 2 SPECTRAL RESPONSE.



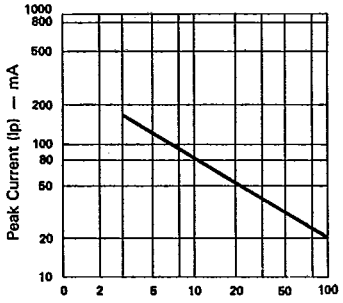
Forward Current (I_F) — mA

Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).



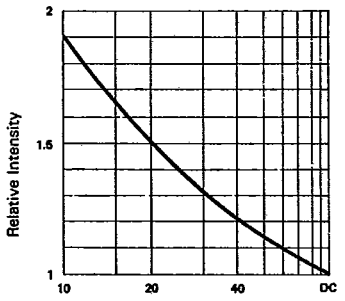
Ambient Temperature (Ta) — °C

Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.



Duty Cycle %

Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE – F = 1 KHz)



Duty Cycle %

Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE% (AVERAGE I_F = 10mA PER SEG.)

SEVEN-SEGMENT LED DISPLAYS

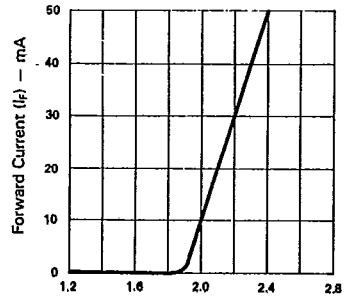
ELECTRICAL/OPTICAL CHARACTERISTICS AT T_A = 25°C
LTS-1700E SERIES

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	Iv	2200	4800		μcd	I_F = 10 mA
Peak Emission Wavelength	λp		630		nm	I_F = 20 mA
Spectral Line Half-Width	Δλ		40		nm	I_F = 20 mA
Forward Voltage, any Segment	V_F		4.2	5.6	V	I_F = 20 mA
Reverse Current, any Segment	I_R			100	μA	V_R = 10V
Luminous Intensity Matching Ratio	Iv-m			2:1		I_F = 20 mA

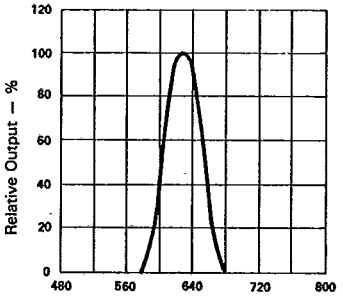
Note: The BIN brightness classification see page 6-161, category C

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

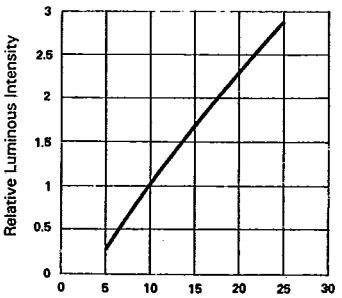
(25°C Ambient Temperature Unless Otherwise Noted)



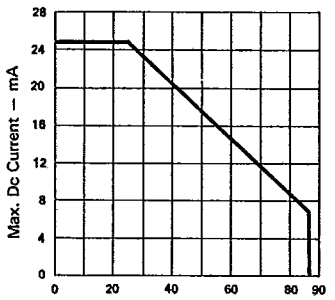
Forward Voltage (V_F) — Volts
Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.



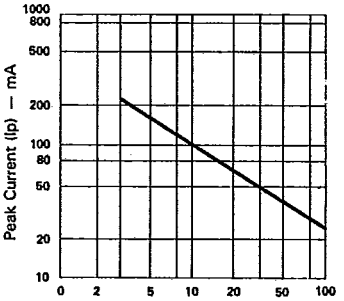
Wavelength (λ) — nm.
Fig. 2 SPECTRAL RESPONSE.



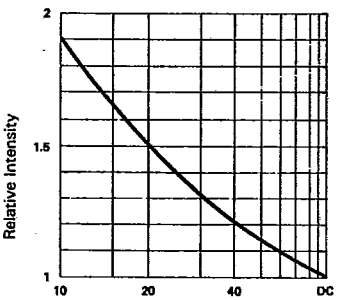
Forward Current (I_F) — mA
Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).



Ambient Temperature (Ta) — °C
Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.



Duty Cycle %
Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE — F = 1 KHz)



Duty Cycle %
Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE% (AVERAGE I_F = 10mA PER SEG.)